Ethiopian TVET-System

# Basic Leather Garments and Goods Production

## Operations LEVEL I

Based on May 2012 Occupational Standards

May, 2020

**Module Title: Applying Quality Standards**

**TTLM Code: IND BLG1 M10 TTLM 0919v1**

**This module includes the following Learning Guides**

**LG39: Assess quality of received articles**

**LG Code: IND BLG1 M10 0919-LO1LG-39**

**LG40: Assess own work**

**LG Code: IND BLG1 M10 0919- LO2 LG-40**

**LG41: Record information**

**LG Code: IND BLG1 M10 0919- LO3 LG-**41

**LG42: Study causes of quality deviations**

**LG Code: IND BLG1 M10 0919- LO4 LG-42**

**LG43: Complete documentation**

**LG Code: IND BLG1 M10 0919- LO5 LG-43**

| Instruction Sheet | LG39: Assess quality of received articles |
|---|---|

This learning guide is developed to provide you the necessary information regarding the

Following content coverage and topics:

- Mechanisms of checking materials/products
- Concepts and use of measuring instrument
- Concepts of corrective action.

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Check received materials or articles against workplace standards and specifications.
- Measure materials or articles using the appropriate measuring instruments in accordance with workplace procedures.
- Identify Causes of any defects and taken corrective actions in accordance with workplace procedures.

**Learning Activities**

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check 1” in page 15. Request the key answer / key to Correction from your teacher or you can request your teacher to check it for you.
4. If your rating is unsatisfactory, see your teacher for further instructions.

| Information Sheet-1 | Mechanisms of checking materials /products |
|---|---|

Leather goods, including clothing, belts, as well as small goods, are not only high value Items, but are also highly variable in terms of species, types of leather, dyeing / color, Chemicals employed in finishing and microbiological activity.

**CHECKING LEATHER:**

For the following general defects: Loose leather, Open grain, tick marks and scratches, brand marks, shade variation, Under/over substance, poor nap on nubucks, growth marks, poor color fastness, grain not matched, fat pocket in sheep, cut marks/flay cut, wire marks, babble holes, vein marks, Wrong cutting direction, Wrong size cut, Extra cutting, Overlap cut, Die damage cut, stretches marks/scratches, small pock marks, pin marks.

**Leather chemical testing in laboratory.**

1) Chromium (VI),

2) Azo colorants,

3) Formaldehyde and

4) Pentachlorophenol are harmful substances which may be found in leather.

**Leather physical testing in factory.**

1. Grain matching – visual examination.
2. Shade matching – visual examination.
3. Anti mortem and post mortem defects – visual examination.
4. Thickness – check with gauge machine.
5. Tensile strength – check with crushing.
6. Durability – check with stretch.
7. Water absorption capacity – check with water.
8. Color fastness – dry rub and wet rub test.

**Metal accessories testing**: zippers, linings, interlinings, and buttons to assess your accessory's performance before entering the manufacturing process.

1. Tests for dry cleaning fastness.
2. Light and color fastness.
3. Water spotting.
4. Finish adhesion.
5. Veslic rubbing on finished garments and materials

## CHECKING PRODUCTS:

### Check Handbags and Small Luggage

1) The strength of strap or handle.
2) Buckle finishes.
3) Strength of metal components.
4) Strength of thread

### Check Belts

1) Color fastness (wet and dry rub fastness) of leather.
2) Tarnishing of buckles.
3) Buckle finishes.
4) Strength of metal components.
5) Strength of thread.

### Check Leather Garments

1) Dry cleaning fastness,

2) Light fastness,

3) Finish adhesion

4) Veslic rubbing can be carried out on finished garment or materials and components prior to manufacturing.

5) Components such as zip, linings, interlinings and buttons should also be assessed for performance.

6) In addition, a cleansing assessment on the whole garment may also be considered.

**Check Small Goods (Purses and Wallets)**

1) Attachment strength of gilt corner pieces,

2) Clasp attachment,

3) Seam strength and abrasion resistance of linings,

4) Flex resistance of outers.

5) Strap/handle strength tests,

6) Abrasion resistance,

7) Flex resistance and seam strength tests are all important for luggage items for Obvious reasons.

| Self-Check -1 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to Aid Some explanations /answers:

1. **Fill in the Blanks** (2 points each)

1. ---------- can be carried out on finished garment or materials and components prior to manufacturing.
2. ----------zippers, linings, interlinings, and buttons to assess your accessory's performance before entering the manufacturing process.
3. ---------- --- and----------Flex resistance and seam strength tests are all important for luggage items for obvious reasons.

2. Short answer(2 points each)

1. List Leather physical testing in factory.
2. List some of area to Check Handbags and Small Luggage
3. List What will be checked for belt
4. List what will be checked for leather garment

| Information Sheet-2 | Concepts and use of measuring instrument |
|---|---|

Measuring instruments are essential tools for giving people and organizations insight into various conditions. It appears that 'knowing' is invaluable.

Managing based on assumed values usually does not include the actual validity. The probability for an incorrect estimation is great when a prediction is made based on subjective assumptions. On the other hand, it appears that predictions of the truth based on measured objective values give a reliable and accurate estimate.

Also, when conditions are measured using validated and reliable scientific instruments, the true circumstances of the situation can be demonstrated with 95% more certainty.

**List of some measuring instruments used in leather goods organizations commonly.**

**01. Leather gauge machine: to measure the leather thickness in the various section of leather hide / skin.**

1. These thickness gauges are especially handy for measuring thickness of small parts, metal, rubber, vinyl, paper, foil and other sheet material.
2. The objects to be measured are clamped by simple lever operation.
3. The measured values are read directly on the dial gauge.
4. Since the anvil and the contact point are adjusted for parallelism, accurate measured values are obtained.

**Measuring tapes: is used to measure the bag's inside and outside components which needs the rotation.**

1) A **tape measure** or *measuring tape* is a flexible ruler.

2) It consists of a ribbon of cloth, plastic, fiber glass, or metal strip with linear measurement markings.

3) It is a common measuring tool. Its design allows for a measure of great length to be easily carried in pocket or toolkit and permits one to measure around curves or corners.

4) Today it is ubiquitous, even appearing in miniature form as a keychain fob, or novelty item.

5) Surveyors use tape measures in lengths of over 100 m (300+ ft).

**Metallic scale:**

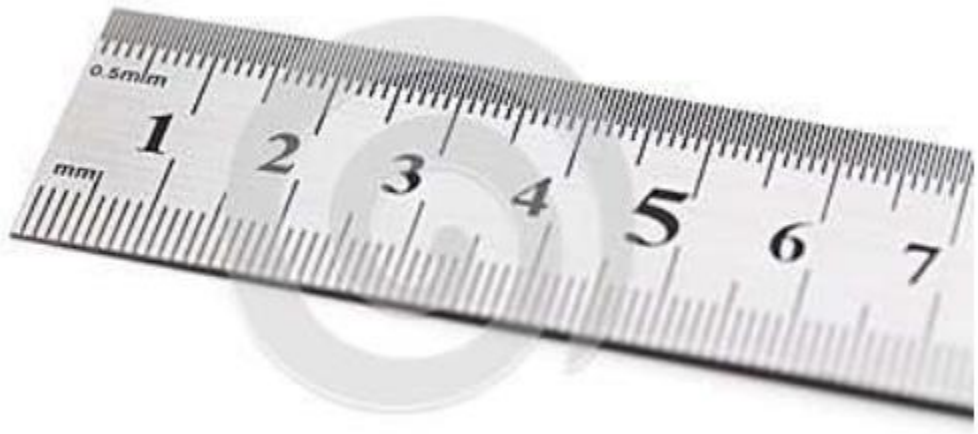
Rulers have long been made of many materials in a wide range of sizes.

Metal is used for more durable rulers for use in the workshop; sometimes a metal edge is embedded into a wooden desk ruler to preserve the edge when used for straight-line cutting.

12 inches or 30 cm in length is useful for a ruler to be kept on a desk to help in drawing.

Shorter rulers are convenient for keeping in a pocket.

Longer rulers, e.g., 18 inches (45 cm) are necessary in some cases.

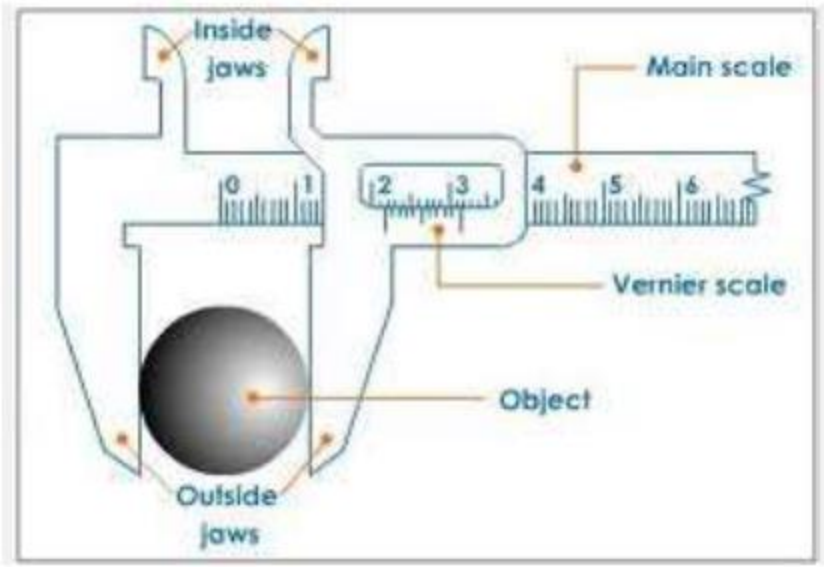



**Rotary tip leather punch hole pliers: used to punch & check holes in the leather belts according the size of the prong of the metal buckle:**

1) This professional quality tool is designed for punching holes in leather of all sorts.

2) The head sizes are: 2, 2.5, 3, 3.5, 4 and 4.5 mm.

**Vernier Caliper scale: is used to measure the inside & outside area of pens stands & leather hard goods.**


Inside jaws
Main scale
0
1
2
3
4
5
6
Vernier scale
Object
Outside jaws

| Self-Check -2 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

1. **Fill in the blank space .**(2 points each)
   1. ----------are essential tools for giving people and organizations insight Into various conditions.
   2. ----------to measure the leather thickness in the various section of leather hide / skin.
   3. ----------is used to measure the bag's inside and outside Components which needs the rotation.
   4. ----------Rulers have long been made of many materials in a wide range of sizes.
   5. ----------is used to measure the inside & outside area of Pens stands & leather hard goods.

2. **Short answer. .(2 points each)**

   1. Write about measuring tapes?

   2. Write about metallic scale?

***Note:*** **Satisfactory rating – 7 points and above**
**Unsatisfactory - below 7 points**

| Information Sheet-3 | Concepts of corrective action |
|---|---|

The leather goods industry works in chain process in which like any other organization things are moving in a chain system and whatever faults are coming your way needs to be rectified immediately else it will goes to damage other products which are coming down the line.

Like if any machine is not working perfectly we cannot use it until and unless it is rectified at the movement else it will deliver the products which are not acceptable on the basis of quality terms.

Difference between correction and corrective action:-

The definition of correction is action taken to eliminate a detected nonconformity.

The Organization must take action to ensure that the nonconformity is corrected.

The emphasis at this stage should be on the immediate action taken versus actions that will be taken.

It is important to note that correction addresses an immediate action without regard to why something happened. It does not address the underlying cause of the nonconformity.

Once the nonconformity has been corrected or contained, the next step in the process is to determine why the nonconformity occurred-the root cause.

The goal of effective root cause analysis is to analyze and investigate the fundamental issue that allowed the nonconformity to occur.

Since corrective action is designed to eliminate the cause of nonconformity and prevent recurrence, the root cause process must be dynamic.

Finally once actions have been taken, verification must take place to validate that the actions taken were appropriate in addressing the nonconformity.

Each component of the corrective action process is essential. It is important to understand the goal of each part of the process to ensure that nonconformities are dealt with appropriately.

Simply put-correction eliminates a detected nonconformity while corrective action eliminates the cause of the nonconformity.

**Corrective action:** “Identification and elimination of the causes of a problem, thus preventing their recurrence.”

The corrective action process can be broken down into various components-

1) Identification of the requirement.
2) Identification of the nonconformity.
3) Correction (or containment) of the issue.
4) Root Cause Analysis.
5) Corrective Action Implementation
6) Verification of Effectiveness of the actions taken

| Self-Check -3 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

1. **Fill in the blank space .**(2 points each)

    1. ----------is Identification and elimination of the causes of a problem, thus preventing their recurrence."
    2. ---------- is action taken to eliminate a detected nonconformity.\

2. Short answer. **.**(2 points each)

    1. List the various components of corrective action process?

***Note:*** **Satisfactory rating – 5 points and above**
**Unsatisfactory - below 5 points**

| Instruction Sheet | LG40: Assess own work |
|---|---|

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Techniques of checking work.

- Procedure of conducting quality work.
- Concepts of non-conformity.
- Methods of identifying and isolating faulty piece.
- Mechanisms of recording and reporting of faults.

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Check completed work against quality parameters and workplace standards relevant to the operations being undertaken.
- Demonstrate and understand on how the work activities and completed work
- Identify faulty pieces and isolated in accordance with company policies and procedures
- Record and report faults and any identified causes in accordance with workplace procedures

**Learning Activities**

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check 1” in page 6. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #2.
5. Read the information written in the “Information Sheet 2”.
6. Accomplish the “Self-check 2” in page 22. Again you can request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
7. If your rating is unsatisfactory, see your teacher for further instructions.

| **Information Sheet-1** | **Techniques of checking work** |
|---|---|

**Sample production as per standard**

Sample production is necessary

- To avoid quality problem.
- To decrease cost.
- To satisfy the customer by producing product per standard.

When a sample shoe has been constructed, it should be subjected to a thorough analysis to uncover any defects in design or construction. Thus we can minimize the chances of premature failure in wear and reveal any characteristics likely to reduce the shoe's sale ability.

**Before start checking work we need to understand Quality checking & Quality standards:**

As per the AMERICAN NATIONAL STANDARDS INSTITUTE:

Quality as the totality of features and characteristics of a product or services that bear (accept or allow) on its ability to satisfy given needs.

- Quality is a system which produces a product service, information or delivery on target with manual variance which meets customers' needs.
- Quality is complete satisfaction (performance, appearance, longevity (long life) at the lowest possible cost.
- Quality is to reach customer's needs at low rates (costs) to the company and achieving employ satisfaction.
- Quality is the extent to which products, services, products and relationships are free from defects, constrains (limitation) and items which do not add value for customers

**Basic Concept of Quality:**

1. Meet the specification.
2. Fitness for use.
3. Anything that can be improved.
4. Consistent - Absence of variation.
5. Conformance to requirements and bad quality is social loss.

**OBJECTIVE OF SETTING QUALITY STANDARDS.**

1. Preventing defects from happening.

2. Subjectively, element of quality relation to the design, style, color and aesthetics.

3. Objectively, quality is the ability to meet consistently the return and clearly started specification.

These aimed at producing a product suitable for end use and price

Different scholars or authors define quality; however Professor David Garvin, from Harvard University defines in to the following principal.

**1. Product oriented:** Quality is determined as a precise and measurable variable and difference in quality reflects differences in the quality of some ingredient or attitude seen to be possessed by a product. In this view quality and quantity has direct relation.

**2. Customer oriented:** Quality is based on the premise that solely the user determined quality. Individual customers are assumed to have different wants or needs and goods that best satisfy the preference are the one they regarded, as having the highest perceived quality. Quality is fitness for use that this view also reflects a highly personalized and subjective view

**3. Manufacturing oriented:** This view focuses on manufacturing and engineering practices. It emphasis conformance to specified requirements. The higher the degree that meets specified requirements the higher the quality. This view seeks to ensure that the deviations from standards set design specifications are minimized. To achieve the quality of conformance means improving in the design of the

a) Equipment

b) Materials

c) Supervision

d) Control

e) Training

**4. Value oriented:** The base for this view is physiological understanding of the meaning of value. Consequently, customers have been conditioned to accept that the quality of product is determined by the price. There for price and quality have a direct relation ship

**5. Trader oriented:** This views deals about that we shall get the right product to the right place at the right time while exceeding our customer's expectation.

**QUALITY DIMENSIONS:** Quality is an important factor which customers looks for in a product to give total satisfaction. Some of the important parameters of quality are listed below:

1. **Performance:** Potential costumer usually evaluate a product to determine if it will perform certain specific functions and determine how well it perform them.

2. **Reliability:** Different products may need repair over their service life. The The leather machineries should be also reliable so as to increase productivity.
3. **Durability:** This is the effective service life of the product customer obviously want products that performed satisfactorily over a long period of time.
4. **Serviceability:** There are many industries where the customer's view of quality is directly influenced by how quickly and economically a repair or routine maintenance activity can be accomplished.
5. **Aesthetics:** This is the visual appeal of the product, often taking into account factors such as style, color, shape, packaging alternatives and other sensory features.
6. **Features:** Usually customer associate high quality with products that have added features: that is, those that has features beyond the basic performance of the competition.

**Setting Quality Standards in the leather goods manufacturing can be done at three levels:-**

**Level 1:** Raw material.

**Level 2:** Production process.

**Level 3:** After final product completion.

**1. RAW MATERIAL INSPECTION:** The raw material checking / inspection are done with the certain given standard of the material.

- Accessories checking with approved sample.
- Material checking – leather, fabric for the given standards.

**2. PRODUCTION PROCESS OF LEATHER GOODS – BAGS INSPECTION AT EACH STAGE 1 - 10.**

The quality can be checked in the various stages involved in the manufacture of leather goods are described below.

**STAGE 1: DESIGNING OF LEATHER GOODS:**

The first step involved in the manufacture of leather goods is designing, rendering & creating illustration. The item, to be manufacture is designed as per the choice of the buyers or designer. The designed pattern needs to check by making one sample from the pattern.

After designing the next step is pattern cutting: the different patterns for different sizes are cut.

**STAGE 2: SELECTION OF THE LEATHER FOR PRODUCT.**

In this stage leather also checked for its anti mortem and post mortem defects**.**

The raw materials procured from the market are selected and sorted as per the quality into different Grades. Different grades of raw materials are taken for manufacture of different components of various Articles.

For example, butt portion of leather is used for making the vamp component of shoe;mbelly portion of leather can be used for quarter component. Slightly defective portion may be utilized for handles, side gussets, bottom portion component etc. The main aim of selection of raw materials is to obtain optimum use of expensive raw material and thereby avoiding wastage and reducing the cost of production.

**STAGE 3: PATTERN CUTTING BY MANUALLY / CAD**.

To check the pattern – one sample product is made through the first pattern, to check the pattern's accuracy and the best fitting of the product in its application.

**STAGE 4: CLICKING OF MATERIAL.**

In this stage clicking or cutting is carried out to cut different components of leather goods which are further checked as per the approved design or size.

**General rules that a hand cutter should be aware on while cutting the leather**

- Closely impact the leather for any defects, these include surface marks, flay cuts, loose offal and mark these areas for ease of identification.
- Check the flesh side of the skin for warble hole and fly cuts.
- Check for the correct line of tightness as this will vary slightly from skin to skin.
- Check the components to be cut make sure that all patterns are there.
- Ensure that your working bench is clean.
- From your cutting sheet select the largest size patterns
- Variations in color
- Grain matching
- The cutter must test his leather for stretch, to ensure that the cut parts are correct.
- After grading and selection the cutter should select for cutting leathers from the horse
- Ensure that your patterns are smooth and your knife is sharp
- After cutting the leather must check the quality of his product, and place it on the bench in front of him.

**Locating cutting patterns and studying specifications once the patterns are ready:-**

- Cutting should start from butt to belly (i.e. from left to right side and from bottom to top).

- Make sure that it is the correct pattern of the article you desire to cut.
- Examine for defects, size and shape of hide/skin.
- Selective cutting must be practiced; the best part of the article demands the best part of the hide/skin.
- Visible area should have good grain surface and section covered could contain grain defect.
- Good cutting begins with a sharp knife less sharpens or blunt knife cuts the leather with rugged edge.
- Over cutting and under cutting must be avoided.
- Pattern must be placed in such a way to insure quality, economy and minimum wastage.
- Straight line cutting must be done first with steel scale/ruler curved line cutting or regular shape must be cut with templates.
- Cutting must be done on a smooth surface of soft wood, play wood, galvanized iron plate or zinc plate for accurate cutting.
- Start cutting from left top corner of the pattern and end at the right bottom corner.
- Cut through the leather in one stroke.

Apart from leather lining material is also clicked in this section. Clicking can be carried out mechanically using clicking press and also manually using clicking knives. The former method is recommended, when the production is carried out at a large quantity only.

**STAGE 5: STAMPING AND EMBOSSING**:

After clicking, different components are stamped / embossed and checked as per design number, size number, lot and serial number in stamping and embossing machine in order to avoid mixing of different components and also to avoid confusion in later stages of production. Trademarks / logo can also be embossed in this by embossing machine.

**STAGE 6: LEATHER SKIVING:**

During this operation the thickness of certain edge of leather are reduced by the help of skiving machine very efficiently. Skiving knife (Raimpee) to allow seams to be produced without the bulkiness.

This operation also ensures a uniform thickness to each edge of the item produced.

**STAGE 7: DECORATION OF THE PATTERNS:**

**PUNCHING AND EYELETTING:** The utility value, punching and eyeleting are also done both in footwear and leather goods for decoration purpose. Punching and eyeleting can be done either by machine or by hand tools

**PERFORATION:** Sometimes series of small perforations of leather goods for decoration purpose to give the finished article a pleasing look. Besides the aesthetic aspect, perforation is also done to cover certain defects in the finished leather and thereby enhancing the market value of the article. Perforation is generally done by hand.

**STAGE 8: CLOSING OF CUT COMPONENTS:**

Different components of leather goods are assembled and joined together with the adhesive application in this operation. Closing is done by stitching and pasting, and in few cases articles closing is carried out only by pasting with synthetic adhesives.

Stitching can be done generally by industrial sewing machines after pasting:

Some common defects in stitching are needed to be taken with care:

- Like improper top line stitching in bags.
- Top tension.
- Bottom tension.
- Slip stitching.
- Uneven & loose stitching.
- Needle & thread relation is not matching.

**STAGE 9: FINISHING OF THE PRODUCT:**

Finishing of leather products includes:

- Edge trimming.
- Edge coloring.
- Thread burning.
- Checking Stitching locks.
- Cleaning by various solvents, waxes, revivers, lacquers to improve its appearance as per the requirement of the different leathers.

Finishing is done to enhance the aesthetic look of leather goods by covering the defects that might have occurred during long production process and handling during the operation. Finishing increases the market value of the product.

3. **Final inspection of the product with the given approved sample**

After the finishing operation the goods are finally inspected, packed properly and kept ready for dispatch to the market.

| Self-Check -1 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to Aid Some explanations /answers:

**2. Fill in the Blanks** (4 points each)

1. ----------is complete satisfaction (performance, appearance, longevity (long life) at the lowest possible cost.
2. **----------** Quality is an important factor which customers looks for in a product to give total satisfaction.
3. **----------** Potential costumer usually evaluate a product to determine if it will perform certain specific functions and determine how well it perform them.
4. **----------** This is the effective service life of the product customer obviously want products that performed satisfactorily over a long period of time.

2. short answer(2 points each)

1. List the objective of setting quality standards.
2. List some of the important parameters of quality in quality dimension.
3. In leather goods manufacturing what are the 3 levels of setting quality standard.
4. List the bag inspection stages.

***Note:*** **Satisfactory rating – 16 points and above**
**Unsatisfactory - below 16points**
You can ask you teacher for the copy of the correct answers.

| **Information Sheet-2** | **PROCEDURE OF CONDUCTING QUALITY WORK.** |
|---|---|

The goal of quality work in every production system is to:-
*(a)* Eliminate nonconformities and their consequences,
*(b)* Eliminate rework and wasted resources, and
*(c)* Achieve these goals at the lowest possible cost.

**1. RAW MATERIAL QUALITY CHECK WITH APPROVED SAMPLE / SWATCH CARD.**

- To check quality of leather for touch, feel, color, grain, gauge & strength.
- To check the lining material – leather / fabric for touch, feel, color & strength.
- To check materials to be used in rein enforcement for strength.
- To check quality of metal fittings – buckle, zippers, buttons, rivets, eyelets, etc for finish, strength, look & feel.


**QUALITY CHECKING DURING PRODUCTION PROCESS.**

In-process inspection aims to prevent products of unacceptable quality from being manufactured. It provides data for making decisions on the product (acceptor rework or reject),as well as on the process(run or stop).In-process inspection can take the form of:

**First LOT inspection:** In principle, whenever production run is

Being carried out , it is prudent to check the first lot of the production before the main production run commences. Many faults can be detected by checking the first lot and this can prevent the whole batch from going wrong.

First lot inspection can verify whether the machine, jigs, fixtures, molds, process parameters such as pressure, temperature etc. are correctly set up. It can also discover whether the operator has fully understood his or her instructions; it can also identify any Discrepancies between the drawing and the quality plan, which can be investigated to avoid any further damage.

**Online inspection:** The purpose of on line or roaming inspection is to help the operator to make the whole run correctly. From time to time, the on line inspector visits the machine or operator and if the quality of the product checked during the visit is wrong on any point, then this must be corrected as quickly as possible.

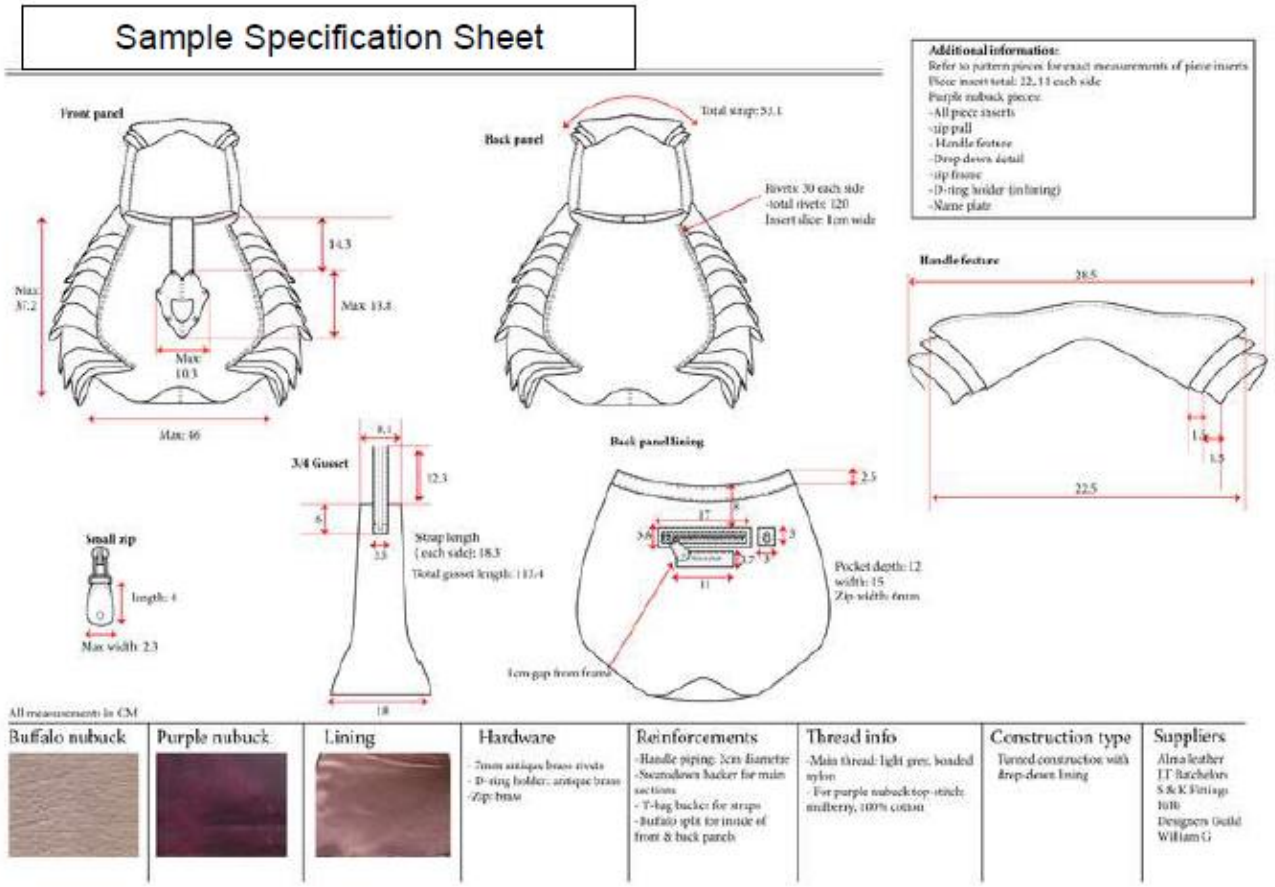
If an operator goes wrong, he or she should be told quickly. The operator should be encouraged to regard the inspector as a friend assisting him in the task of keeping defective work to a minimum.

**Last-piece inspection** is carried out on the last item manufactured in the lot. This allows action to be taken to rectify faults in the machine and/or tools before beginning the next lot. If these faults are only detected when the next lot has started, there will be a risk of production delays.

**Stage inspection** involves inspection of products after every operation or group of operations. Stage inspection points are located on the shop floor itself, where components are tendered for inspection. Jobs found to be unacceptable are returned for rectification if they are rectifiable, otherwise they are scrapped.

## 3. FINAL QUALITY CHECK OF LEATHER GOODS WITH SPECIFICATION SHEETS AND APPROVED SAMPLE:

Final inspection and/or testing are done after product realization activity pertaining to the product has been completed.




This is carried out with the objective of ensuring that the goods concerned are satisfactory prior to dispatch to the customer r or may be to another department for the n e x t operation.

Based on the product specifications, inspection instructions are prepared that lay down the details of the tests to be carried out, the measuring instruments or test equipment to be used and the criteria for deciding acceptance of the product with respect to each characteristic.

Inspection instructions may also include details of the sampling plan such as size of sample and the criteria of acceptance to be followed.

Few general points for quality checking are given below:

- The product should stand proud, with composure and balance.
- Stitching should be straight and evenly spaced.
- Edges should be thin and straight.
- Handbags generally have wider spaced stitching than small leather goods.

- The handle of a handbag should feel comfortable in your palm, and be well assembled.
- The joints of the bag's handles should be well reinforced to hold the weights comfortably.

| Self-Check -2 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

3. **Fill in the blank space .**(2 points each)
   1. ---------- are done after product realization activity pertaining to the product has b e e n completed.
   2. **----------** is carried out on the last item manufactured in the lot.

4. **Short answer. .(2 points each)**
   1. What is the goal of quality work in every production system.
   2. During production process what the inspection stages.

***Note:*** **Satisfactory rating – 4 points and above**
**Unsatisfactory – below 4 points**

| **Information Sheet-3** | **Concepts of non-conformity** |
|---|---|

**In quality management, a non conformity (also known as a defect) is a deviation from a specification, a standard, or an expectation.**

A defect being the non fulfillment of intended usage requirements, whereas nonconformity is the non fulfillment of a requirement.

A similar distinction is made between validation and verification.

**TYPES OF NON CONFORMITY:**

***Minor Nonconformity –***

Any nonconformity which does not adversely affect the performance, durability, interchangeability, reliability, maintainability, effective use or operation, weight or appearance (where a factor), health or safety of a product.

Multiple minor nonconformities when considered collectively may raise the category to a major or critical nonconformity.

***Major Nonconformity*** –

Any non conformity other than critical, which may result in failure or materially reduce the usability of the product for the intended purpose (i.e. effective use or operation, weight or appearance (where a factor), health or safety) and which cannot be completely eliminated by rework or reduced to a minor nonconformity by an approved repair.

***Critical Nonconformity*** –

Any non conformity which may result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product or prevent performance of a vital agency mission.

Advantages of conformity are that it means everyone has a shared way of life and understand basic moral values. Advantages of non conformity are that it provides a

more diverse and interesting background

Disadvantages of conformity are that the world can become a boring place if everyone acts the same.

Disadvantages of non conformity are that this can lead to anti-social behavior and sometimes jail in extreme cases.

| **Self-Check -3** | **Written Test** |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

1. **Fill in the blank space .**(2 points each)

1. ----------is a deviation from a specification, a standard, or an expectation.
2. ---------- is the non fulfillment of a requirement.
3. ---------- being the non fulfillment of intended usage requirements,

**2. Short answer. .(2 points each)**

1. what are types of non conformity.

***Note:*** **Satisfactory rating – 3 points and above**
**Unsatisfactory - below 3 points**

| **Information Sheet-4** | **Methods of identifying and isolating faulty piece** |
|---|---|

It is necessary to exercise suitable control over the movement of the product through the inspection area in order to avoid a mix-up of accepted and rejected products. Being final stage of inspection it may also result in loss of brand value, rejection of the entire consignment by the customer.

Most of the companies do initiate suitable measures to ensure the compliance of the conforming product dispatch through various means.

Some of the means exercised by the companies are as below:

a. Provision of **clear labels, stickers (preferably of different colors)** for products awaiting inspection, accepted products, rejected products, products on hold awaiting the results of tests and/or inspection and so on;

Separation of accepted and rejected products in separate **trays or boxes.**

**White pencils and chalks** are used to mark the defect in the leather hides or leather cut components.

Review of products in rejected trays for rectification or repair or for sale as seconds;

The accepted product should only be released to the next processor to the customer by a person who is authorized to do so. Suitable records are maintained on rejection at different stages.

| Self-Check -4 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

4. **true or false .**(2 points each)

1. Separation of accepted and rejected products in separate trays or boxes.

2. White pencils and chalks are used to mark the defect in the leather hides or leather cut components.

3. The accepted product should only be released to the next processor to the customer by a person who is authorized to do so.

4. Provision of clear labels, stickers (preferably of different colors) for products awaiting inspection, accepted products, rejected products for inspection.

***Note:*** **Satisfactory rating –5 points and above**
**Unsatisfactory – below 5 points**

| Information Sheet-5 | Mechanisms of recording and reporting of faults |
|---|---|

**CHECK SHEETS / QUALITY SHEETS:**

Check sheets are a simple device on which data is collected by putting a mark against predetermined items of measurement. The purpose for which the data is collected should always be clear. These check sheet needs to be monitored on day to day basis to keep check the area of faults and its reporting for the rectifications.

This is also helpful in finding out that in which division are creating maximum number of faults and report to the concern supervisor for the same.

For example, check sheets can be used to track events by factors such as timeliness (in time, one day late, two days late, etc.), reasons for failure during inspection (defects like blow holes, cracks, etc.) or number of customer complaints per day.

**SAMPLE CHECK SHEET FOR INSPECTION OF METAL ACCESSORIES:**

| Check Sheet / Quality sheet | |
|---|---|
| Product: Sheep upper | Date: 24 November 2013 |
| Stage: Final inspection | Shop: Foundry |
| Total piece of leather inspected : | Inspector:_____ |
| Defect type Check Subtotal | |
| Damaged | \|\|\| |
| Improver metal finish | \|\| |
| uneven shape | \|\|\|\| |
| Others | \| |
| Total | |

**CHECK SHEET FOR INSPECTION OF LEATHER:**

| Check Sheet / Quality sheet | |
|---|---|
| Product: Sheep upper | Date: 24 November 2013 |
| Stage: Final inspection | Shop: Foundry |
| Total piece of leather inspected : | Inspector:_____ |
| Defect type Check Subtotal | |
| Scratch | \|\|\| |
| Loose leather | \|\| |
| Grain cracking | \|\|\|\| |
| Pork marks | \| |
| Chicken pox marks | |
| Others | |
| Total | |

## CHECK SHEETS OF FINAL INSPECTIONS – MAJOR / MINOR DEFECTS.

Check sheets, are a simple device on which data is collected by putting a mark against predetermined items of measurement.

The purpose for which the data is collected should always be clear.

For example, check sheets can be used to track events by factors such as timeliness (in time, one day late, two days late, etc.), reasons for failure during inspection (defects like blow holes, cracks, etc.) or number of customer complaints per day.

**Sample Check sheet for final inspection of leather goods / bags:**

| Check Sheet / Quality sheet | |
|---|---|
| Product: Sheep upper | Date: 24 November 2013 |
| Stage: Final inspection | Shop: packing dept. |
| Total piece of leather inspected : | Inspector:_____ |
| Defect type Check Subtotal | |
| Minor defects: | |
| loose stitch. | \|\|\| |
| Loose leather | \|\| |
| dirty | \|\|\|\| |
| | \| |
| Major defects: | |
| Open seam. | |
| Stitch Lock missing. | |
| Damaged accessory | |
| Open cut mark on leather | |
| Total | 10 |

| Self-Check -5 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

1. **true or false .**(2 points each)

1. Check sheets are a simple device on which data is collected by putting a mark against predetermined items of measurement.
2. The purpose for which the data is collected should always be clear.

***Note:*** **Satisfactory rating – 3 points and above**
**Unsatisfactory - below 3 points**

| Instruction Sheet | LG41: Record information |
|---|---|

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Method of recording quality performance
- Concept of maintaining records

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Record basic information on the quality performance in accordance with workplace procedures
- Maintain records of work quality according to the requirements of the company

**Learning Activities:**

1. . Read the specific objectives of this Learning Guide.
2. . Read the information written in the “Information Sheets 1”.
3. . Accomplish the “Self-check 1” in page 9. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. . If your rating is unsatisfactory, see your teacher for further instructions.

| Information Sheet-1 | METHOD OF RECORDING QUALITY PERFORMANCE |
|---|---|

**Documentation of various quality requirements of product:**

In general, a *document* is a record or the capturing of some event or thing so that the information will not be lost. *Documentation* is the process of providing evidence (including both primary and secondary sources) over a period of time in order to carry out analysis, evaluate & provide clear steps in carrying out the any activity.

## Quality Performance for recording information

- ✓ Quality Management Terms:

- **Quality Improvement** can be distinguished from Quality Control in that Quality Improvement is the purposeful change of a process to improve the reliability of achieving an outcome.
- **Quality Control** is the ongoing effort to maintain the integrity of a process to maintain the reliability of achieving an outcome.

- **Quality Assurance** is the planned or systematic actions necessary to provide enough confidence that a product or service will satisfy the given requirements for quality.

**Techniques of recording basic information & other indicators on the quality performance**

✓ Performance measurement process

- Performance measurement is primarily managing outcome, and one of its main purposes is to reduce or eliminate overall variation in the work product or process. The goal is to arrive at sound decisions about actions affecting the product or process and its output.

✓ What Are Performance Measures?

- Performance measures quantitatively tell us something important about our products, services, and the processes that produce them. They are a tool to help us understand, manage, and improve what our organizations do. Performance measures let us know:
    - how well we are doing
    - if we are meeting our goals
    - if our customers are satisfied
    - If our processes are in statistical control
    - If and where improvements are necessary.

✓ Performance measurement process

- Most performance measures can be grouped into one of the following six general categories. However, certain organizations may develop their own categories as appropriate depending on the organization's mission:

1. **Effectiveness**: A process characteristic indicating the degree to which the process output (work product) conforms to requirements.(Are we doing the right things?)

2. **Efficiency**: A process characteristic indicating the degree to which the process produces the required output at minimum resource cost. (Are we doing things right?)

3. **Quality**: The degree to which a product or service meets customer requirements and Expectations.

4. **Timeliness**: Measures whether a unit of work was done correctly and on time. Criteria must be established to define what constitutes timeliness for a given unit of work. The criterion is usually based on customer requirements.

5. **Productivity**: The value added by the process divided by the value of the labor and capital consumed.

6. **Safety**: Measures the overall health of the organization and the working environment of its employees.

| Self-Check -1 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

**5. Fill in the blank space .**(2 points each)

1. **----------** can be distinguished from Quality Control in that Quality Improvement is the purposeful change of a process to improve the reliability of achieving an outcome.
2. **----------** is the ongoing effort to maintain the integrity of a process to maintain the reliability of achieving an outcome.
3. ---------- is the planned or systematic actions necessary to provide enough confidence that a product or service will satisfy the given requirements for quality.
4. **----------** The value added by the process divided by the value of the labor and capital consumed.
5. **----------** Measures the overall health of the organization and the working environment of its employees.
6. **----------** A process characteristic indicating the degree to which the process output (work product) conforms to requirements.

| Information Sheet-2 | CONCEPT OF MAINTAINING RECORDS |
|---|---|

Complete and well-organized documentation is the key for the smooth functioning of the organization.

The purpose of the documentation is providing clear guide line & procedure for the functioning of any activity in the organization.

The core of the documentation process is to ensure that organization function's work efficiently is optimum & leaves lesser scope of the confusion in terms handling of any assignment / routine activity by the staff.

It is however, the term ***record*** is different from the document as records deals with capturing of the real time data under given condition. They are different from the document with respect to the utilization.

The **documents** are generally prepared taking in to long term horizon & objective of the organization in to account. These can be company policy, procedure, system documents, Standard Operating Procedure (SOP) etc.

Whereas, the records can be daily production report, rejection report, hourly production, material consumption reports etc. Records are generally dynamic in nature.

Though every organization has different purpose & objective of maintaining documents also the degree of documentation also varies. However, generally the purpose of documentation is following:

- To provide defined procedure for carrying out routine work of the organization.
- To provide guidance for reporting & developing structure based information flow
- To helps to train new personnel on understanding and adopting new system

To suggest likelihood course of action in case of decision making in different options

- To help & ensure organizations practices are in accordance to the statuary requirements.
- To ensure maintenance of the record & retrieval of the same.

The documentation always follows a system which is designed on the basis of statuary & policy based requirement of the organization. However, these can be amended on time to time basis.

The documents pertains to the quality department relates to procedural requirement of inspection including procedure of inspection, testing requirement & method of inspection, analysis of defects & method of reporting.

The function of Quality department of any organization is to ensure that the products and services provided by the organization match the expectation of the customers.

Therefore, records and documents plays an important role is ensuring that the process variables are recorded and all corrective, preventive actions have been initiated /carried out as per the policy and procedural requirement of the organization.

**PREPARATION OF QUALITY STANDARD AS PER PRODUCT:**

**Quality Standards:** Three kinds of tolerances have to be realistic before any system of quality control can begin to operate with efficient economy. They are as follows:

a. Tolerances for the characteristics of the final products

b. Tolerances for the parts and manufacturing processes , raw material and so on which may have an effect upon the characteristics of the final product

c. Tolerance which permits assembly and interchangeability of components (if applicable)

The characteristics of the final products such as shoes, garments, goods might have been set by the engineer or by the customer himself based upon the information they get or in possession. Although it may be desired that the performance variable may be increased or decreased but it is equally difficult to understand from the customer point of view whether the customer is going to accept or will insist upon augmentation of the reliability.

For example, suppose a goods manufacturer think about altering the chemical composition of the metal accessory which might not have any adverse effect on the performance of the good. However even though it appears to be simple to answer but from the quality point of view it is not that simple. Before fixing up the altered chemical composition the quality department has to carry out various tests to establish the fact that assumption is acceptable to the standard defined or it matches the standard which has been set.

Therefore, quality department may carry out extensive tests at regular intervals during the process of manufacturing, raw material selection as well as on the final product.

Evaluation of the specification for parts, components and manufacturing process is being defined through trials and testing thereby defining quality standards for the product.

**FIXING PRODUCT SPECIFICATIONS:**

A specification is the minimum requirement according to which a producer or service

Provider makes and delivers the product and service to the customer. In setting Specification limits, the following should be considered:

- The user's and/or customer's needs
- Requirements relating to product safety and health hazards provided for in the
- Statutory and regulatory requirements
- Requirements provided for in national and/or international standards the competitor's product specifications, in order to gain marketing advantages

In designing the product, the capacity of processes and machines should be kept in mind. It is also necessary to maintain a balance between cost and value realization. The clearer the specification , the better the possibility of creating and delivering quality products.

**Monitoring of process and product quality as per company procedure:**

The process of manufacturing of the product is an important part as it defines the output of the organization. The performance of the product much depends upon the type of, material being selected, the standard of quality maintained during the manufacturing process and the factor of reliability taken in to account.

Thus the monitoring of the process and the product becomes paramount.

Different organizations uses different parameters and tools for monitoring of the manufacturing process as well as maintaining product's quality. Some of the tools which are extensively used are as below:

**3. CHECK SHEETS**

Check sheets, or tally charts, are a simple device on which data is collected by putting a mark against predetermined items of measurement. The purpose for which the data is collected should always be clear. For example, check sheets can be used to track

events by factors such as timeliness (in time, one day late, two days late, etc.), reasons for failure during inspection (defects like blow holes, cracks, etc.) or number of customer complaints per day.

**Check sheet for inspection of leather:**

| Check sheet | | |
|---|---|---|
| Product: Sheep upper | | Date: 24 November 2013 |
| Stage: Final inspection | | Shop: Foundry |
| Total piece of leather inspected : 45 | | Inspector:_____ |
| Defect type | Check | Subtotal |
| Scratch | \|\|\| | 3 |
| Loose leather | \|\| | 2 |
| Grain cracking | \|\|\|\| | 4 |
| Others | \| | 1 |
| Total | | 10 |

**FLOW CHARTS:**

A **flowchart** is a schematic diagram of the sequence of steps involved in an operation or process. It provides a visual tool that is easy to use and understand. By seeing the steps involved in an operation or process, everyone develops a clear picture of how the operation works and where problems could arise.

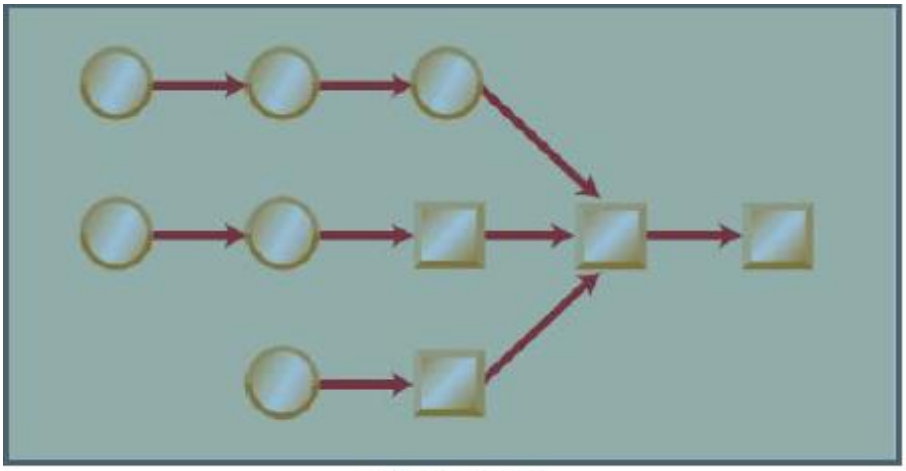
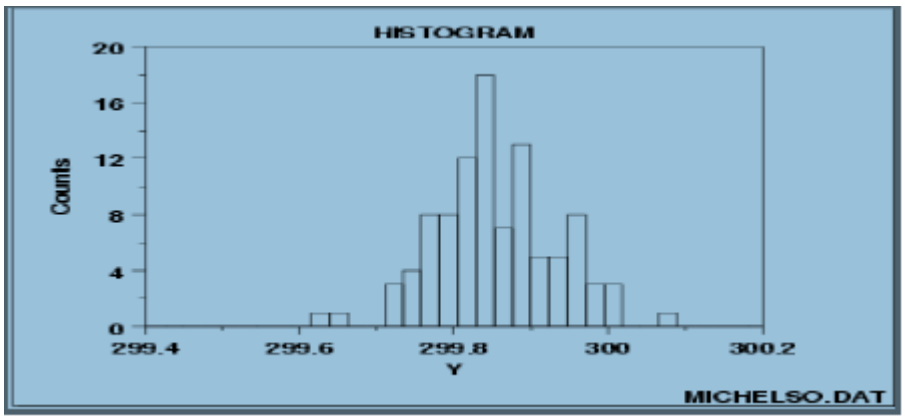


Fig. Flow chart

## GRAPHICAL LAYOUTS:

There are numerous types of graphs, ranging from simple plotting points to a graphic presentation of complex and interrelated data. Graphs are a good way to organize, summarize and display data for subsequent analysis. The most common examples of graphs are histograms, line graphs, and pie charts.




## PARETO ANALYSIS:

Pareto analysis is based on a bar graph and a line chart. The bar graph lists in descending order the problems affecting a process. The line chart accumulates the percentage of the total number of occurrences for each problem area. The other name of this tool is the 80-20 rule, indicating that 80 per cent of the problems stem from 20 per cent of the causes. It helps to identify the most important area to work to solve the problem. Joseph M. Juran, an expert on quality control has said that one should concentrate on the “vital few” rather than the “trivial many” in tackling quality problems.

Let us take an example of a restaurant that is trying to analyze and prioritize the complaints received from its customers. The complaint data is shown in the table below.

The Pareto diagram of this data is shown in figure

| Type of complaints | Number | Percentage | Cumulative percentage |
|---|---|---|---|
| Service delay | 150 | 50 | 50 |
| Wrong items served | 75 | 25 | 75 |
| Wrong billing | 45 | 15 | 90 |
| Staff behavior | 30 | 10 | 100 |
| Total | 300 | 100 | |

**Pareto analysis of complaints received in a restaurant**

**CAUSE AND EFFECT DIAGRAMS:**

Cause and effect diagrams represent the relationship between a problem and its potential causes. They are also known as fishbone, or Ishikawa, diagrams. These diagrams deal only with factors, not quantities.

To prepare a fishbone diagram, all the causes relating to a problem (effect) are collated through brainstorming among the people concerned. The problem is indicated on the horizontal arrow). All the causes listed from the brainstorming are classified by theme.

Each theme represents a diagonal attached to the spine of the diagram. Individual causes are listed along the diagonal.

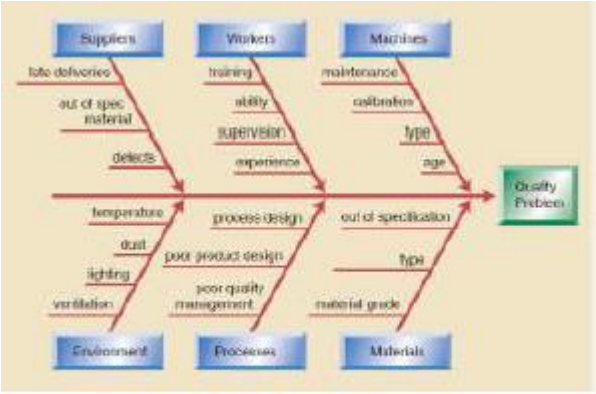



**Fig. Fish bone diagram**

**Steps**

1. Identify the Problem
2. Work Out the Major Factors Involved
3. Identify Possible Causes
4. Analyze your diagram

## 8. SCATTER DIAGRAMS:

Scatter diagrams are used to study the possible relationship between one variable and another. This can be used to test the possible cause and effect relationship. It does not prove that one variable causes the other, but it does make it clear whether a relationship exists between them and determines the strength of the relationship.

Usually the horizontal axis in the diagram is the one over which there is control.

Each data point as observed is plotted. The more closely the dots group along an axis, the stronger the correlation. The more scattered they are, the weaker the correlation.

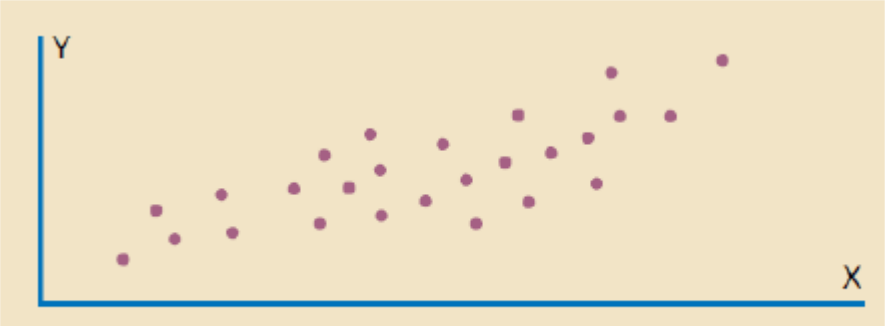



**Fig. Scatter diagram**

## CONTROL CHARTS:

Control charts are pictures of variations found in a process. The data of measurement or observations is plotted on graphs against time. These charts consist of two lines, called upper control limit (UCL) and lower control limit

(LCL). These are not the same as specification tolerances, rather they are the values within which a process is expected to operate and if the results of measurements exceed these limits then the cause must be investigated and action taken on the process immediately.

In order to reduce variations in the process, fundamental changes may need to be made in methods, machines and/or materials. Control charts help to monitor and control quality by acting as a set of process “traffic lights” and are valuable in all types of activity. Control charts can be plotted for variable or continuous data (such as weight of a bag, temperature of cold storage, time of baking, dimension of a rod or speed of a conveyor).

Control charts for variables consist of mean and range charts. Control charts can also be plotted for attribute or discrete data such as the number of defects found in a lot, the number of cracks in a piece, the number of missing stitches in

a garment, percentage delays in shipments or percentage delays in responding to customer complaints. As regards attribute data, the two most popular charts are control charts for the

number of defective items in a lot, known as an “npchart” and the proportion of defective items, known as a “p-chart.

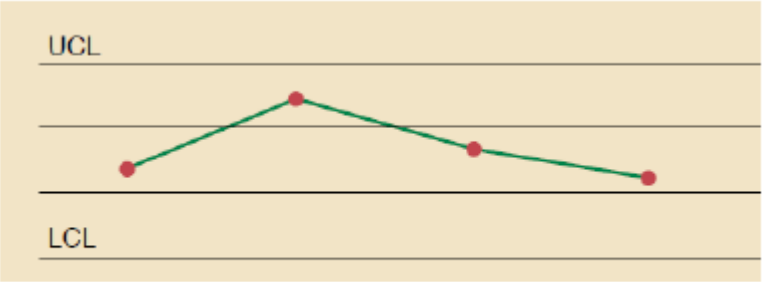



Fig. Control Chart

| Self-Check -2 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

**6. Fill in the blank space .**(2 points each)

1. ---------- is a record or the capturing of some event or thing so that the information will not be lost.
2. ---------- are a simple device on which data is collected by putting a Mark against predetermined items of measurement.

2. True or false. **.** (2 points each)

1. The documentation always don't follows a system which is designed on the basis of statuary & policy based requirement of the organization.
2. Complete and well-organized documentation is the key for the smooth functioning of the organization.
3. A flowchart is a schematic diagram of the sequence of steps involved in an operation or process.
4. There are numerous types of graphs, ranging from simple plotting points to a graphic presentation of complex and interrelated data.
5. Pareto analysis is not based on a bar graph and a line chart.

***Note:*** **Satisfactory rating – 7 points and above**
**Unsatisfactory - below 7 points**

| Instruction Sheet | LG42: Study causes of quality deviations |
|---|---|

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Concepts of investigating cause of deviation
- Methods of taking preventive action.

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Investigate causes of deviations from final outputs and reported in accordance with organization procedures
- Recommend suitable preventive action based on organization quality standards and identified causes of deviation from specified quality standards of final service or output

**Learning Activities**

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check 1” in page 7. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. If your rating is unsatisfactory, see your teacher for further instructions.

| Information Sheet-1 | Concepts of investigating cause of deviation |
|---|---|

**Deviation is** the difference between an observed value and the expected value of a variable or function

**Specification:** Exact statement of the particular needs to be satisfied, or essential characteristics that a customer requires (in a good, material, method, process, service, system, or work) and which a vendor must deliver.

Specifications are written usually in a manner that enables both parties (and/or an independent certifier) to measure the degree of conformance.

**Specifications are divided generally into two main categories**:

(1) **Performance specifications:** conform to known customer requirements.

(2) **Technical specifications:** express the level of performance of the individual units, and are subdivided into

(a) Individual unit specifications which state boundaries (parameters) of the unit's performance consisting of a nominal (desired or mandated) value and tolerance (allowable departure from the nominal value,

(b) Acceptable quality level which states limits that are to be satisfied by most of the units, but a certain percentage of the units is allowed to exceed those limits, and

(c) Distribution specifications which define an acceptable statistical distribution (in terms of mean deviation and standard Deviation) for each unit, and are used by a producer to monitor its production processes.

The object of specification is to communicate to someone how something is to be done, so that it specifies intentions are clearly understood without doubt or ambiguity and there will be no confusion in the mind of the person who is to perform the specified works.

Specification breakdown the interrelated information shown on the drawings into separate organized orderly units of work and generally describes the followings:

**Type of quality of materials, equipment's and fixtures, quality of workmanship, methods of fabrication installation and erection, test and requirements.**

Specification is complementary to drawings and is a written form of communication.

Generally written communication has the following advantages:

- It is relatively permanent as it can be referred to or used as references
- Alteration of written document is very cumbersome or impossible
- It is difficult or impossible to deny what is written

It is reliable

- It is can be more understandable as it can be read over and over again
- It can be reproduced especially with photocopying machines.
- It is formal and authoritative
- Record keeping is made possible

Disadvantages of written communication can generally be:

- It can spread errors far and wide
- It can be responsible for delay responses because it lacks instant feedback
- Poor handwriting and typographical errors are part of its weaknesses
- It is time consuming, especially when encoding or decoding
- It can be lost in transit
- Illiterates are at a loss because written communication requires some level o literacy for results.

Specification is a written form of communication performs the following functions:

- Specification used by the Quantity department for preparing bills of quantities
- Specification used to carry out the job by the customer requirement.
- Specification are used in conjunction with bill of material and the drawings by the Contractor to prepare tender bid

**SPECIFICATION IN LEATHER BAGS:**

A typical bag Specifications for general purpose may include some of the basic information as listed below:

1. The picture of the bag.
2. Details of upper material – leather.
3. Details of lining material – leather or fabric.
4. Construction type.
5. Details of Metal accessories and their placement in the bag.
6. Size specification with given measurement.
7. Quality check needs to be taken into consideration while manufacturing.

**MANUFACTURING SPECIFICATION OR PROCESS SPECIFICATION:**

Process specifications generally define the method along with limits of process or operations such as temperature, pressure, force etc. so that the product is being manufactured in accordance to the requirement. For example stitching parameters can be specified by 3 factors:

a) Stitch length

b) Thread type & number

c) Needle size & type

When a deviation of internal controls is observed an investigation should be started to identify the root-causes causing the deviation. The primary aim of root-cause analysis

(RCA) is to identify the root cause(s) of a problem in order to create effective corrective actions that will prevent that problem from ever occurring again.

The root-cause is usually identified systematically through investigation. There can be more than one root-cause underlying one problem; therefore one should strive to identify all root-causes to create correct solutions and prevent reoccurrence of the problem. Upon identification of the root cause a corrective action should be undertaken to stop the deviation. Implementing preventive actions, when possible, should prevent occurrence of the problem again in the future. Make an *action plan* when required.

**a. DEVIATION DUE TO SUBSTANDARD MATERIAL**

Substandard material indicates that any given thing that is below the acceptable level or standard. The primary types of technical standards are:

- A standard specification is an explicit set of requirements for an item, material, component, system or service. It is often used to formalize the technical aspects of

a procurement agreement or contract. For example, there may be a specification for a turbine blade for a jet engine that defines the exact material and performance requirements.

- A standard test method describes a definitive procedure that produces a test result. It may involve making a careful personal observation or conducting a highly technical measurement. For example, a physical property of a material is often affected by the precise method of testing: any reference to the property should therefore reference the test method used.

- A standard practice or procedure gives a set of instructions for performing operations or functions. For example, there are detailed standard operating procedures for operation of a nuclear power plant.

-- A standard guide is general information or options that do not require a specific course of action.

- A standard definition is formally established terminology.

Standard units, in physics and applied mathematics, are commonly accepted measurements of physical quantities. Manufacturers often sacrifice the quality of a product for financial corruption. It is also seen that the cost of repairing a product as a result of substandard building materials runs into a large amount of dollars.

Most of footwear industries become in competitive in the world market because of poor quality; this is one of the reasons behind in using substandard material. The effect of using substandard material

a) It decreases the acceptability of the product

b) It decreases the quality of the product

c) Give a better chance for the competitor

**b. DEVIATION DUE TO MECHANICAL FAULTS:**

The process faults or the mechanical deviations arises when the process parameters does not conform to the standard process requirements. There can be number of reasons for such variation such as the mechanical issues of the machines, delay in placing the processed items on the machines, dislocation of the components, fault in measuring devices etc. The deviation in the process caused due to machine which results in defective sub assembly, products or production of substandard parts. For example if the marking patterns are not correct then it will lead to the wrong stitching.

It may be noted that the process faults are not because of the substandard materials. Material some time may be substandard but at the same time process deviation may also be one of the causes for the production of substandard product.

For example a cut component having light embossing does not mean that only material or only process has failed. It could be combination of both or due to material which might have looseness or due to less temperature or pressure during embossing.

It is therefore important that while analyzing the deviation the real cause should be ascertained. It may require studying the process (es), sub processes, evaluation of process parameters and the material(s), components etc. In the extreme case origin of the material and manufacturing process needs to be verified.

**c. SKILL RELATED DEVIATION:**

Skill is an ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carryout complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people (interpersonal skills).

The problems pertaining to the deviation from standard also arises from the inability of the operatives to perform the task in repetitive manner.

There can be many reasons however the most primary reason is the inadequate training of the operator or having no or less experience in handling the operation.

There can be other issues such as rotation of the operators, use of semi skilled manpower, mis understanding in interpreting specifications. However it is more important that the operators shall be trained properly as well as informed well about the product/ process /raw materials or assembly.

Textile, Footwear and Clothing Mechanics should:

- Focus on practical and manual work with pre training is essential through long and short term application
- Possess good eyesight (may be corrected) and normal color vision
- Have capability to carry out repeated cycle of work over a long period of time.
- Display good hand-eye coordination
- Be able to work quickly to locate and fix problem.
- Have good problem solving, trouble shooting and communication skills
- High endurance towards long period working

| **Information Sheet-2** | **METHODS OF TAKING PREVENTIVE ACTIONS** |
|---|---|

**Preventive measures**

In industry, at an average of 6 % of turnover is spent on quality control measures.

However only a small portion of this amount is spent on reducing mistakes and most of it is spent on testing and removing mistakes once they have happened.

This is contrary to the fact that 70% of all quality problems could have been avoided through the use of preventative methods.

In the service industry there is often little chance to put things right once they have happened. Therefore, it is here that preventative measures should be even more predominant.

| Self-Check -1&2 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

**Directions**: Answer all the questions listed below. Illustrations may be necessary to aid

Some explanations /answers:

**7. Fill in the blank space .**(2 points each)

1. ----------is the difference between an observed value and the expected value of a variable or function.

2. ----------is Exact statement of the particular needs to be satisfied, or essential characteristics that a customer requires and which a vendor must deliver.

3. ----------is conform to known customer requirements.

4. **----------** express the level of performance of the individual units.

5. Substandard material indicates that any given thing that is below the acceptable level or standard.

**Choose the best answer**

1. Bag specification sheet includes **(2 points)**

   a) Accessories type.
   b) Upper material.
   c) Reinforcements.
   d) lining material
   e) All

2. Specifications are divided generally into two main categories **(2 points)**

   a) Performance specifications.
   b) Technical specifications.
   c) Substandard material.
   d) Mechanical faults.
   e) All

**Matching (10 points)**

| A | B |
|---|---|
| 1. Specification | a) Requirements for Safeguards. |
| 2. Preventive measure | b) Difference between observed value to the standard value |
| 3. Substandard material | c) Essential characteristics that a customer requires. |
| 4. Deviation | d) Material which is below the acceptable level or Standard. |
| 5. Hazardous mechanical motion | e) Minimize quality problem. |

***Note:*** **Satisfactory rating - 8 points and above Unsatisfactory - below 8 points**
You can ask you teacher for the copy of the correct answers.

| **Instruction Sheet** | **LG43: Complete documentation** |
|---|---|

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Record Documents of product quality and performance
- Maintain test record
- Record outcomes

This guide will also assist you to attain the learning outcome stated in the cover page.
Specifically, upon completion of this Learning Guide, you will be able to:

- Record Information on quality and other indicators of production performance.
- Record all production processes and outcomes.

**Learning Activities**

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check 1” in page 6. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. If your rating is unsatisfactory, see your teacher for further instructions.

| Information Sheet-1 | MECHANISMS OF RECORDING PRODUCTION PROCESS |
|---|---|

## Introduction

In general, a *document* is a record or the capturing of some event or thing so that the information will not be lost. *Documentation* is the process of providing evidence (including both primary and secondary sources) in a research paper.

**Proper documentation is a must activity for improve quality standards. Record Documents regarding production process & product quality issues and their rectifications, preventive actions.**

Documentation is the key to compliance and ensures traceability of all development, manufacturing, and testing activities. Documentation provides the route for auditors to assess the overall quality of operations within a company and the final product.

- Good documentation constitutes an essential part of the quality assurance system. Clearly written procedures prevent errors resulting from spoken communication, and clear documentation permits tracing of activities performed.
- Documents must be designed, prepared, reviewed, and distributed with care.
- Documents must be approved, signed, and dated by the appropriate competent and authorized persons.
- Documents must have unambiguous contents. The title, nature, and purpose should be clearly stated. They must be laid out in an orderly fashion and be easy to check. Reproduced documents must be clear and legible.
- Documents must be regularly reviewed and kept up-to-date. When a document has been revised, systems must be operated to prevent inadvertent use of superseded documents (e.g., only current documentation should be available for use).
- Documents must not be handwritten; however, where documents require the entry of data, these entries may be made in clear legible handwriting using a suitable indelible medium (i.e., not a pencil). Sufficient space must be provided for such entries.
- Any correction made to a document or record must be signed or initialed and dated; the correction must permit the reading of the original information. Where appropriate, the reason for the correction must be recorded.

Record must be kept at the time each action is taken and in such a way that all activities concerning the conduct of preclinical studies, clinical trials, and the manufacture and control of products are traceable.

- Storage of critical records must at secure place, with access limited to authorized persons. The storage location must ensure adequate protection from loss, destruction, or falsification, and from damage due to fire, water, etc.
- Records which are critical to regulatory compliance or to support essential business activities must be duplicated on paper, microfilm, or electronically, and stored in a separate, secure location in a separate building from the originals.
- Date may be recorded by electromagnetic or photographic means, but detailed procedures relating to whatever system is adopted must be available. Accuracy of the record should be checked as per the defined procedure. If documentation is handled by electronic data processing methods, only authorized persons should be able to enter or modify data in the computer, access must be restricted by passwords or other means, and entry of critical data must be independently checked.
- It is particularly important that during the period of retention, the data can be rendered legible within an appropriate period of time.
- If data is modified, it must be traceable.

**THE CONTROL OF QUALITY RECORDS INVOLVES THE FOLLOWING INDIVIDUAL PROCEDURES**:

- ✓ Filling Out Quality Records.
- ✓ Making Corrections on Quality Records.
- ✓ Maintaining Quality Records.
- ✓ Identifying Quality Record Retention Requirements.
- ✓ Archiving Quality Records.
- ✓ Disposition of Original Quality Records.

**Strictly follow.**

- Record all necessary information immediately upon completion of a task.
- Never trust your memory or write results on loose pieces of paper.
- Write your name legibly in ink. Remember that by signing records you are Certifying that the record is correct and that you have performed the task as per the defined procedure.
- Draw a single line through any mistakes, and initial and date the correction. Include a reason for the correction at the bottom of the page.
- Record details if you deviate from a procedure. Ask your supervisor or the quality department for advice if a deviation should occur.
- Do not document someone else's work unless you are designated and trained to do so.
- Never assume that undocumented work has been properly completed – if it's not written down, then it didn't happen.

**MAINTAIN QUALITY TEST RECORD:**

Test records should include complete data derived from all tests conducted to ensure compliance with established specifications and standards, including examinations and assays, as follows:

- A description of samples received for testing, including the material name or source, batch number and, where appropriate, the manufacturer and/or supplier; alternatively, other distinctive code, date of sample taken and, where appropriate, the quantity of the sample and date the sample was received for testing
- A statement of, or reference to, each test method used
- A statement of the weight or measure of sample used for each test as described by the method; data on, or cross-reference to, the preparation and testing of reference standards, reagents, and standard solutions
- A complete record of all raw data generated during each test, in addition to graphs, charts, and spectra from laboratory instrumentation, all properly identified to show the specific material and the batch tested
- A record of all calculations performed in connection with the test including, for example, units of measure, conversion factors, and equivalency factors
- A statement of the test results and how they compare with established acceptance criteria
- The signature of the person who performed each test and the date(s) on which the tests were performed
- The date and signature of a second person, showing that the original records Were reviewed for accuracy, completeness, and compliance with established standards.

**COMPLETE RECORDS SHOULD ALSO BE MAINTAINED FOR:**

1. Any modifications to an established analytical method.
2. Periodic calibration of laboratory instruments, apparatus, gauges, and recording devices.
3. All stability testing performed.
4. Out-of-specification investigations.

**Record outcomes:**

The very basic purpose of recording the outcomes is analyze the variations in the parameters. This is also having historical references whenever the references are required to be made or accordingly any article/process is required to be studied.

The secondary function of the maintaining the record is to ensure that the plans are being developed correctly and clearly. This includes analysis of the previous records, verification of the work being carried out.

This enhances the work being carried out and improves the process and the product.

The quality department follows the cycle of data collection, analysis of the data and improvement cycle to enhance the quality of the product and the process.

**THE ADVANTAGES OF RECORDING AN OUTCOME IS:**

1. It shows you are monitoring the outcome of your work in the community.
2. Evidences what you do and helps you to understand how to make it better.
3. Gives your organization credibility with authorities and funding bodies.
4. Visibility of successes helps to engage staff with outcome recording.
5. Consultancy support from our in house outcome and technical specialists.
6. Secures your future in a very uncertain funding situation.

| Self-Check -1 | Written Test |
|---|---|

Name: _____ Date: _____

Time started: _____ Time finished: _____

***Instructions*:** Write all your answers in the provided answer sheet on page 7.

***Directions:*** Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

**True or false (2 points each)**

1. Good documentation constitutes an essential part of the quality assurance system.

2. Documents must have ambiguous contents.

3. Recording of all necessary information immediately upon completion of a task is not advisable.

4. For quality recording trust your memory or write results on loose pieces of paper.

5. Documents must be designed, prepared, reviewed, and distributed with care.

**Choose the best answer (2 points)**

4. A description of samples received for testing, including

a) Sample quantity

b) Date of sample taken

c) Batch number

d) Manufacturer

e) All

***Note:*** **Satisfactory rating - 6 points and above Unsatisfactory - below 6 points**

**Answer Sheet**

Name: _____ Date: _____